



Report to the Subcommittee on  
Tactical Air and Land Forces,  
Committee on Armed Services, House  
of Representatives

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May 2014

# ARMY NETWORKS

## Select Programs Are Utilizing Competition to Varying Degrees

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Highlights of [GAO-14-460](#), a report to the Subcommittee on Tactical Air and Land Forces, Committee on Armed Services, House of Representatives

## Why GAO Did This Study

For nearly 20 years, the Army has had limited success in developing an information network—sensors, software, and radios—to give soldiers the exact information they need, when they need it, in any environment. The Army has declared its tactical network as its top modernization priority and estimated the modernization may cost up to \$3 billion per year into the foreseeable future. The Army's current modernization approach is intended to leverage solutions developed by private industry.

Given the costs and importance of the network, GAO was asked to examine aspects of the Army's effort to acquire network capabilities. This is the third report in response to the Subcommittee's requests.

In this report, GAO examines the Army's progress in implementing competitive strategies for tactical networking systems. GAO selected a non-generalizable sample of 9 of these 25 systems that the Army indicated are critical for ensuring soldiers are able to send and receive mission-critical information between units, and that cover the breadth of warfighter operations. GAO reviewed acquisition strategies for evidence that the Army was seeking competition.

## What GAO Recommends

GAO is not making recommendations in this report. DOD provided technical comments on a draft of this report, which were incorporated, as appropriate.

View [GAO-14-460](#). For more information, contact Belva M. Martin at (202) 512-4841 or [martinb@gao.gov](mailto:martinb@gao.gov).

May 2014

## ARMY NETWORKS

### Select Programs Are Utilizing Competition to Varying Degrees

## What GAO Found

The Army is incorporating competition in various ways for most of the nine tactical networking acquisition programs GAO examined. To achieve the best return on the government's investment, federal agencies are generally required to award contracts competitively. As the Army has decreased the amount of in-house system development it is doing for tactical networking equipment, it is using various tools to involve private industry to meet its needs. One such tool is the agile capabilities life cycle process whereby the Army determines the capabilities it needs and gaps in those capabilities, and uses market research and semi-annual evaluations, among other means, to involve industry. According to the Army, this agile process provides opportunities for enhancing competition. The Army acquisition strategy for eight of the nine systems discusses plans for competition and market research. An acquisition strategy is not required for the Soldier Radio Waveform Appliqué system because it is not a formal acquisition program; however, the Army conducted market research and is seeking competition. GAO grouped the nine systems into three categories based on similarities in the competition strategy. Specifically,

- In two of the nine systems GAO examined—Mid-tier Networking Vehicular Radio and Soldier Radio Waveform Appliqué—the Army is beginning new programs and structuring the acquisition approaches to competitively procure non-developmental capabilities directly from industry. The Army competitively awarded a procurement contract for its Mid-Tier Networking Vehicular Radio, providing units for risk reduction and requirements verification. In April 2014 the Army competitively awarded contracts to four vendors to buy the Soldier Radio Waveform Appliqué.
- Five of the nine systems GAO studied have been under development for many years. Three of those—the Airborne, Maritime, and Fixed Station radio; the Rifleman Radio; and the Manpack Radio—were part of the Joint Tactical Radio System, which was previously competed and which the Army has restructured. The Army had been developing software-defined radios to interoperate with existing radios. The Army is now seeking non-developmental solutions through competition to provide the needed capability. For the other two systems, the Joint Battle Command–Platform and Nett Warrior, the Army reports that it plans to use full and open competition for individual subcomponents. In both cases, the Army conducted market research to identify vendors or seek feedback on requirements.
- The Army deemed competition impractical for the two remaining systems in GAO's review, the Warfighter Information Network-Tactical Increment 2 and Warfighter Information Network-Tactical Increment 3. The Army considered acquisition strategies for more competition in the development and procurement of these systems but determined that only the incumbent contractor could satisfy the requirements without unacceptable delays. Nevertheless, the Army continues using market research to identify interested contractors and has awarded several competitive contracts for subcomponents under these two systems.

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## Abbreviations

|       |  |
|-------|--|
| ACAT  | Acquisition Category                         |
| AMF   | Airborne and Maritime/Fixed Station          |
| BFT   | Blue Force Tracking                          |
| DOD   | Department of Defense                        |
| FAR   | Federal Acquisition Regulation               |
| FCBC2 | Force XXI, Battle Command, Brigade and Below |
| FFP   | Firm Fixed Price                             |
| GMR   | Ground Mobile Radio                          |
| HMS   | Handheld, Manpack, and Small Form Fit        |
| IDIQ  | Indefinite Delivery Indefinite Quantity      |
| JBC-P | Joint Battle Command-Platform                |
| JCR   | Joint Capabilities Release                   |
| JTRS  | Joint Tactical Radio System                  |
| MDA   | Milestone Decision Authority                 |
| MNVR  | Mid-Tier Networking Vehicular Radio          |
| NIE   | Network Integration Evaluation               |
| RFP   | Request for Proposal                         |
| SALT  | Small Airborne Link 16 Terminal              |
| SANR  | Small Airborne Networking Radio              |
| SRW   | Soldier Radio Waveform                       |
| WIN-T | Warfighter Information Network-Tactical      |

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May 29, 2014

The Honorable Michael R. Turner  
Chairman  
The Honorable Loretta Sanchez  
Ranking Member  
Subcommittee on Tactical Air and Land Forces  
Committee on Armed Services  
House of Representatives

In 2011, the Army began a major undertaking to modernize its tactical network—an effort that may cost about \$3 billion per year into the foreseeable future—to improve communication and other capabilities and to provide needed information to soldiers and commanders on the battlefield. The Army has declared the network its number one modernization priority. For nearly 20 years, the Army has had limited success in developing its information network of sensors, software, and radios to give soldiers and commanders exact information when they need it, in any environment, and thus improve situational awareness and decision making in combat. Under its current network modernization strategy, the Army is implementing a new agile process, intended to leverage industry technology solutions with less system development by the Army to field new and improved capabilities as they become available.

Due to the network's cost and importance, the ambitious nature of the current network modernization strategy, and the department's history with system acquisitions over the past decade, you asked us to examine elements of the new process the Army is using to acquire network capabilities. We have issued two products on these efforts. In our first report, we addressed issues related to the Army's agile process.<sup>1</sup> In our

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<sup>1</sup>GAO, *Army Networks: Size and Scope of Modernization Investment Merit Increased Oversight*, [GAO-13-179](#) (Washington, D.C.: Jan. 10, 2013).

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second report,<sup>2</sup> we examined the Army's Network Integration Evaluations (NIE), a key enabler of the agile process.<sup>3</sup>

In this third report, we examined the progress the Army has made in implementing competitive contracting strategies for tactical networking systems to allow soldiers to move mission-critical information between units.<sup>4</sup>

To conduct this work, we reviewed Federal Acquisition Regulations (FAR) and Department of Defense (DOD) policies to identify documentation and procedures as a guide to assess the Army's use of competitive contracting strategies. We looked for evidence that the Army had utilized some of the principles of competition in its acquisition strategies, but did not assess compliance with policy and federal acquisition regulations, for a non-generalizable sample of 9 of the 25 tactical networking systems by determining if DOD had developed the documentation. These systems are the Mid-Tier Networking Vehicular Radio, Soldier Radio Waveform—Appliqué, Rifleman Radio, Manpack, Airborne and Maritime/Fixed Station, Joint Battle Command—Platform, the Nett Warrior, Warfighter Information Network—Tactical Increment 2, and Warfighter Information Network—Tactical Increment 3. We selected these 9 systems because the Army has indicated they are critical systems for ensuring soldiers are able to send and receive mission-critical information between units and they cover the breadth of warfighter operations. Because this is a non-generalizable sample, we are not projecting our findings across the universe of tactical networking systems. We reviewed Army market research reports, requests for information, acquisition strategies, contract award information, and briefings to senior Army officials. We independently researched accessibility of acquisition announcements on

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<sup>2</sup>GAO, *Army Networks: Opportunities Exist to Better Utilize Results from Network Integration Evaluations*, [GAO-13-711](#) (Washington, D.C.: Aug. 22, 2013).

<sup>3</sup> Network Integration Evaluations are held semi-annually and typically last about six weeks. NIEs provide a venue for operational testing of formal acquisition programs and for demonstrating government and industry provided systems under evaluation in an operational environment.

<sup>4</sup> In addition to your interest in this area, the House Armed Services Committee's report accompanying H.R. 1960, one of the bills for the National Defense Authorization Act for Fiscal Year 2014 also indicated an interest in the cost savings that could be realized through enhanced competition and alternative contracting mechanisms. H.R. Rep. No. 113-102, at 9 (2013).

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federal procurement opportunity web sites. We also interviewed key program officials to discuss both their consideration of competition in contracting strategies and their plan for engaging industry. A detailed description of our scope and methodology is included in appendix I.

We conducted this performance audit from August 2013 to May 2014 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Background

Over the last decade, the Army focused most of its decisions to field network improvements on supporting operations in Iraq and Afghanistan—an effort that was both expensive and time consuming. The Army did not synchronize the development and fielding efforts for these network improvements and the funding and timelines for the associated acquisition activities were rarely, if ever, aligned. The Army's efforts to develop networking capabilities fell far short of their objectives, resulting in what the Army believes was a loosely coordinated set of disparate sensors, applications, and services. The Army fielded capabilities in a piecemeal fashion and the user in the field was largely responsible for integrating them with existing technology. In other words, the Army had neither an overarching framework outlining its desired tactical networking capabilities nor a strategy for acquiring them.

In an effort to establish a requirements framework for acquiring its networking capabilities, the Army, in December 2011, finalized the Network-enabled Mission Command Initial Capabilities Document, a central document that describes the essential network capabilities required by the Army, as well as scores of capability gaps. These capabilities support an Army mission-command capability defined by a network of command posts, aerial and ground platforms, manned and unmanned sensors, and dismounted soldiers linked by an integrated suite of mission command systems. A robust transport layer capable of delivering voice, data, imagery, and video to the tactical edge (i.e., the forward battle lines) connects these systems.

The Army also developed a network strategy that changes the way it develops, evaluates, tests, and delivers networked capability to its operating forces, using an approach called capability set management. A capability set is a suite of network components, associated equipment,



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and software that provides an integrated network capability.<sup>5</sup> With this approach, the Army plans to buy only what is currently available, feasible, and needed for units preparing to deploy, instead of developing an ultimate capability and buying enough to cover the entire force. Every year, the Army plans to integrate another capability set that reflects changes or advances in technology since the previous set. To support this approach, the Army has implemented the agile capabilities life-cycle process, which uses the identified capability gaps to solicit solutions from industry and government and then evaluate those solutions during the NIEs in consideration for later fielding to combat units. This process is quite different from the past Army methods in which the Army assumed beginning-to-end control of the design, development, test, and procurement of networking systems. Army officials expect the agile process and associated network integration evaluations to provide opportunities for greater industry involvement by allowing vendors to both propose solutions to address capability gaps and showcase their systems in a realistic environment. This allows the Army to identify and evaluate systems without the need for large investments in development programs and without having to enter into procurement contracts.

Competition in contracting is a critical tool for achieving the best return on investment for taxpayers and can help save the taxpayer money, improve contractor performance, and promote accountability for results. Past GAO work has found that the federal government can realize significant cost savings when awarding contracts competitively. DOD also acknowledges specific benefits from competition, such as direct cost savings; improved product/service quality; enhanced solutions and industrial base; fairness and openness; prevention of fraud, waste, and abuse; and increased likelihood of efficiencies and innovation. Federal acquisition regulations require, with limited exceptions, that contracting officers shall promote and provide for full and open competition in soliciting offers and awarding government contracts.<sup>6</sup>

Federal acquisition regulations also require that agencies conduct market research, which DOD recognizes as a key to effective competition.

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<sup>5</sup>Capability sets are numbered in sequence with the year they are fielded, so capability set 13 was fielded beginning in 2013, capability set 14 is being fielded in 2014, and so on.

<sup>6</sup>Full and open competition—achieved when all responsible sources are permitted to compete—is the preferred method for federal agencies to award contracts.

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According to the Defense Acquisition University, market research involves collecting and analyzing information about capabilities within the market to satisfy agency needs. It is a continuous process for gathering data on product characteristics, suppliers' capabilities, and the business practices/trends that surround them—plus the analysis of that data to make smart acquisition decisions. Market research can vary across acquisitions given that the nature of the research depends on such factors as urgency, dollar value, complexity, and past experience. One such market research method allows for government to communicate its needs to industry and identify commercial items that could be used to satisfy those needs. The FAR outlines specific techniques for conducting market research. These could include, but are not limited to, consulting with government and industry subject-matter experts, publishing requests for information, or conducting interchange meetings with potential offerors, and hosting pre-solicitation conferences for potential offerors, which the Army has called industry days.

Congress passed the Weapon Systems Acquisition Reform Act of 2009, which outlines several congressionally-directed defense acquisition reforms related to competition.<sup>7</sup> Subsequently, the Under Secretary of Defense for Acquisition, Technology and Logistics issued an update to DOD acquisition policy, which provides direction and guidance on how program management will create and sustain a competitive environment at both the prime and subcontract level throughout the program's life cycle.<sup>8</sup> DOD policy requires programs to outline their market research in their acquisition strategies, which is the business and technical management framework for planning, directing, contracting for, and managing a program. Market research, in general, is a process for gathering data on, among other things, product characteristics, suppliers' capabilities, and the business practices and trends that surround them—plus the analysis of that data to make smart acquisition decisions.

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<sup>7</sup>See, e.g., Pub. L. No. 111-23 §§ 202 and 203, as amended.

<sup>8</sup>Interim Department of Defense Instruction No. 5000.02, Operation of the Defense Acquisition System (Nov. 25, 2013), which incorporated and canceled previously existing Department of Defense, Undersecretary of Defense (Acquisition, Technology, and Logistics), Directive-Type Memorandum (DTM) 09-027—Implementation of the Weapon Systems Acquisition Reform Act of 2009 (Washington, D.C.: Dec. 4, 2009) with the exception of Enclosure 9, which pertains to DOD's acquisition of services.

Army Utilizing Competition in Various Ways Across Nine Tactical Networking Systems

The Army is incorporating competition in various ways for most of the nine tactical networking acquisition programs we examined. As the Army decreases the amount of in-house system development it is doing for tactical networking equipment, it is using various tools to involve industry in seeking items that the Army does not pay to develop to meet its needs. One such tool is the agile capabilities life cycle process and the associated semi-annual Network Integration Evaluations (NIEs), which serve as market research to identify potential solutions to meet capability gaps. This process relies heavily on industry for success, thus providing opportunities for enhancing competition when procuring new tactical networking capabilities. The Army has also reached out to industry to identify small businesses with the skills, experience, knowledge, and capabilities required to manage, maintain, operate, sustain, and support several tactical networking systems. Two of the Army networking systems are new programs that are building their acquisition approaches around competition and leveraging contracting mechanisms that Army officials believe will enhance competition. Five other networking systems have modified their acquisition approaches in ways that would incorporate greater levels of competition. This includes reaching out to industry to provide potential solutions, and competing the procurement of individual components. The two remaining systems have incorporated competition at some point in their past development efforts, but the Army has determined that expanding competition at this stage is not feasible or cost effective. In these cases, the Army continues to engage with industry to identify potential vendors for future components of these systems.

Table 1 contains a list of the nine systems in our review and provides a brief description of each. Appendix II contains more detailed information about the nine systems in our review.

Table 1: Description of Selected Army Tactical Networking Systems

| Tactical networking system                 | Description   |
|--|---|
| Mid-Tier Networking Vehicular Radio (MNVR) | The Mid-Tier Networking Vehicular Radio will be a multichannel vehicular radio that will provide networking capability to connect unmanned sensors to decision makers on the move, which could significantly reduce decision-making time. MNVR will also provide an Internet-like mobile ad-hoc networking capability and will be interoperable with current force radios through simultaneous and secure voice, data, and video communications.                  |
| Soldier Radio Waveform (SRW) Appliqué      | The SRW Appliqué Radio System is a single channel, vehicular mounted, software-defined radio for use by brigade combat teams. It provides a bridge for SRW radios to interface with units equipped with legacy systems, such as the Single Channel Ground and Airborne Radio System radios. SRW-Appliqué runs the soldier radio waveform and acts as a conduit for transmitting voice and data between the dismounted soldier, his unit, and higher headquarters. |

| Tactical networking system                                  | Description   |
|---|---|
| Airborne and Maritime/Fixed Station (AMF)                   | AMF products are software programmable, multi-band, multi-mode mobile networking radios, providing simultaneous voice, data and video communications for Army aviation platforms.   |
| Rifleman Radio  | The Rifleman Radio is a single-channel handheld networking radio with a global positioning system receiver that uses the soldier radio waveform and allows leaders and soldiers to form ad-hoc communications networks in order to exchange voice, video, and data during all aspects of military operations.   |
| Manpack   | The Manpack radio is a two-channel radio with military global positioning system that is capable of operating at various transmission frequencies, which allows Soldiers to participate in voice and data communications networks as well as transmit position location information.  |
| Joint Battle Command-Platform (JBC-P)                       | The JBC-P provides joint forces command and control and situational awareness capability at the platform level and enables mission accomplishment across the entire spectrum of joint military operations. JBC-P provides continuous near real-time identification of friendly locations to populate the joint common operating picture. JBC-P provides tactical chat with chat room capability resulting in enhanced collaboration for commanders; mission command applications for planning and execution; a graphical interface with improved display of maps and images; enhanced situational awareness between mobile platforms, tactical operation centers, and dismounted soldiers equipped with Nett Warrior; and ruggedized equipment. |
| Nett Warrior  | The Nett Warrior is an integrated dismounted leader situational awareness system for use during combat operations. It allows for faster and more accurate decisions in the tactical fight.  |
| Warfighter Information Network-Tactical (WIN-T) Increment 2 | WIN-T, which is developing multiple increments of capability, employs a combination of terrestrial, airborne, and satellite-based transport options to connect all users. WIN-T Increment 2 provides commercial and military band satellite communications to Division, Brigade, Battalion and Company units while also providing on-the-move capability and a mobile infrastructure. It further provides satellite communications and supports limited collaboration and mission planning.   |
| Warfighter Information Network-Tactical (WIN-T) Increment 3 | WIN-T Increment 3 develops the network operations software to enable seamless integration of tactical network functions, and enhanced waveforms for increased throughput capability. These enhancements will be provided as technical insertions to previous WIN-T Increments.  |

Source: U.S. Army (data); GAO (analysis and presentation).

Eight of the nine systems we reviewed have either completed an acquisition strategy or have one in draft, and all include language that pertain to market research and competition as required by DOD policy. The Army has not developed an acquisition strategy for SRW-Appliqué because it does not meet the requirements of a formal acquisition program. Rather, the Army has developed a plan to deliver a radio waveform capability to satisfy a directed requirement, has used market research, and is seeking competition for this system, as discussed below. Table 2 presents the status of the acquisition strategy for the nine systems.

**Table 2: Status of Army Systems' Acquisition Strategies**

| System  | Status of acquisition strategy |
|---|--------------------------------|
| Mid-Tier Networking Vehicular Radio               | ●                              |
| Soldier Radio Waveform Appliqué <sup>a</sup>      | ○                              |
| Airborne and Maritime/Fixed Station               | ◐                              |
| Rifleman Radio <sup>b</sup>                       | ●                              |
| Manpack <sup>b</sup>                              | ●                              |
| Joint Battle Command-Platform                     | ●                              |
| Nett Warrior                                      | ●                              |
| Wideband Information Network-Tactical Increment 2 | ●                              |
| Wideband Information Network-Tactical Increment 3 | ●                              |

Legend: ● = completed; ◐ = in draft; ○ = not planned.

Source: U.S. Army (data); GAO (analysis and presentation).

<sup>a</sup>According to Army officials, they created an acquisition plan in lieu of an acquisition strategy because Soldier Radio Waveform Appliqué is not a formal acquisition program. Defense Federal Acquisition Regulation Supplement requires officials to prepare written acquisition plans for acquisitions for development when the total cost of all contracts for the acquisition program is estimated at \$10 million or more and for acquisitions for production or services when the total cost of all contracts for the acquisition program is estimated at \$50 million or more for all years or \$25 million or more for any fiscal year. The Army has used competitive procedures and market research, as discussed below.

<sup>b</sup>The Rifleman Radio and Manpack Radio are both included within the Handheld, Manpack, and Small Form Fit (HMS) acquisition strategy.

## Army Initiating Two New Systems Predicated on Competition and Off-the-shelf Acquisitions

In two of the cases we examined, the Army is beginning new programs, structuring the acquisition strategies to focus on competition, and procuring directly from industry. One of these systems, the Mid-Tier Networking Vehicular Radio (MNVR), will provide a subset of functionality the Army intended to get from the Joint Tactical Radio System (JTRS) Ground Mobile Radio (GMR), which was canceled in 2011. The other system, SRW Appliqué, augments the capabilities of existing radios and allows them to communicate with newer, software-defined radios.

### Mid-Tier Networking Vehicular Radio

The MNVR represents a subset of functionality that was demonstrated in the JTRS Ground Mobile Radio (GMR) program. The Army has a directed requirement to procure MNVR to provide secure communications. Accordingly, on September 24, 2013, following full and open competition, the Army awarded an MNVR production contract. The Army used the initial delivery order from this contract to procure a limited number of radio systems to conduct risk reduction and requirements verification. The acquisition strategy contains summary information regarding plans for competition and market research and states that follow-on production contracts are expected to use a full-and-open competition strategy.

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## SRW Appliqué

Two vendors sent SRW Appliqué radios through the Army's Network Integration Evaluation in 2011, which the Army has described as a mechanism for market research. In March 2012, the Army finalized market research to identify sources for the production and delivery of approximately 5,000 radios to satisfy a directed requirement for a soldier radio waveform capability.<sup>9</sup> The associated indefinite delivery, indefinite quantity contracts were competitively awarded in April 2014 to four vendors.<sup>10</sup> Additionally, in 2013, the Army also purchased SRW Appliqué radios off the General Services Administration schedule for demonstration at a Network Integration Evaluation in May 2014 and operational testing at a Network Integration Evaluation in November 2014.<sup>11</sup>

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## Army Modifying Approaches to Create Opportunities for Competition for Five Legacy Networking Systems

AMF, Rifleman Radio, and Manpack were all part of the restructured JTRS program, which utilized competition early on to develop software-defined radios that would interoperate with existing radios and increase communications and networking capabilities. Before the Army began restructuring the JTRS program in 2011, it encountered a number of technical challenges that resulted in cost growth and schedule delays. Consequently, the Army is now reaching out to industry for proposed solutions. The Army has also adjusted its approach for the Joint Battle Command-Platform (JBC-P) and Nett Warrior programs and assumed the role of integrator. In this capacity, the Army is purchasing individual components from industry and integrating them together to build the systems. According to the Army, all of the contract orders for both systems over fiscal years 2012 and 2013 were awarded using full and open competition.

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<sup>9</sup> The Army can prepare directed requirements in cases where a specific limited but necessary urgent need exists. Per Army regulation, the scope of a directed requirement will be limited to addressing urgent operational needs that fall outside the established Joint Capabilities Integration and Development System requirements process and if not addressed immediately will seriously endanger personnel or pose a major threat to the success of ongoing operations. Army Regulation 71-9, Warfighter Capabilities Determination (Dec. 28, 2009).

<sup>10</sup> An IDIQ contract is a type of indefinite delivery contract that provides for an indefinite quantity of supplies or services within stated limits, during a fixed period.

<sup>11</sup> In accordance with FAR 6.102(d)(3), use of the GSA Schedules Program is considered a "competitive procedure" under the Competition in Contracting Act of 1984 when the GSA Schedule ordering procedures are followed.

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## Airborne and Maritime/Fixed Station

Initially, Army officials believed there was only one source that could produce a particular AMF variant, but they later used market research to identify a second potential source that was interested in competing for that system. The acquisition strategy for that variant now states that full and open competition and best value procedures will be used when awarding contracts, with an emphasis on modified non-developmental solutions. To continue efforts to identify potential sources to fulfill this requirement, the Army has also posted pre-solicitations for industry comment and hosted interested vendors at industry days to discuss draft Requests for Proposals (RFP) and answer any non competition-sensitive question about the pending solicitation.

## Rifleman Radio

Both DOD and Congress have pressed for additional competition for the Rifleman Radio. In the Conference Report of the National Defense Authorization Act for Fiscal Year 2013, the conferees noted strong agreement with the direction provided by certain DOD and Army documents regarding the conduct of full and open competition within the JTRS program, which included the Rifleman Radio. The Army modified the acquisition strategy to reflect the push for added competition, which entailed developing a competition strategy, conducting market research, releasing draft solicitations, and holding industry days. Consequently, the full-rate production decision was delayed from May 2012 to the second quarter of fiscal year 2017. The Army is currently receiving low-rate initial production units. Army planning documents indicate plans for full and open competition and IDIQ contracts for the subsequent full-rate production units. Further, the Army anticipates releasing the RFP by June 2014 and awarding contracts by March 2015. The Army has also posted requests for information to seek industry feedback on documentation required for potential future solicitations as well as hosted industry days for added market research.

## Manpack

As with Rifleman Radio, the DOD and the Congress have encouraged increased competition for the Manpack, which was also part of the JTRS system. The Army is currently receiving low-rate initial production units. However, the full-rate decision has slipped to the fourth quarter of fiscal year 2017. According to the Army, this resulted from congressional direction for full and open competition of the full-rate production units, which involve several activities noted above. In addition, delayed approval of the acquisition strategy postponed the RFP, which is expected to occur

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by September 2014.<sup>12</sup> The Army has reached out to industry to identify sources for sustainment of Manpack radios, solicited feedback on documentation required for future solicitations, and hosted industry days.

**Joint Battle Command-Platform** The JBC-P is largely a software development effort that will utilize existing hardware from a predecessor system. However, it will also incorporate new hardware such as a new tablet computer and a beacon device for situational awareness data. Wherever possible, the Army plans to use existing, competitively awarded Army contracts to procure new hardware. The Army contracted with the Software Engineering Institute to assess the capabilities of several software development organizations, ultimately selecting the Software Engineering Directorate at Redstone Arsenal to develop JBC-P software.<sup>13</sup> According to Army officials, any necessary software that is beyond the directorate's capabilities will be competed to industry. Army officials told us they also have plans to compete the blue-force tracker 2 component, which is the Army's latest system for tracking the location of friendly forces. During fiscal years 2012 and 2013, the Army made 15 contract awards, 13 of which were awarded using full and open competition and the remaining 2 were awarded using full and open competition after exclusion of sources.<sup>14</sup> Army officials told us some vendors were automatically excluded from competition because they failed to meet certain criteria, such as security classification. These contract awards covered a variety of items, including miscellaneous communications equipment, cables, system configuration services, and other information technology equipment and services. The Army also conducted market research to identify a second source for armored and Stryker brigade combat team installation kits, which, according to Army officials, saved \$900,000 per brigade.

**Nett Warrior** The Nett Warrior acquisition strategy describes the program's planned approach for engaging in market research, including Internet-based searches, manufacturer site visits, and requests for information via the Federal Business Opportunities website—federal agencies' primary tool

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<sup>12</sup> The Handheld, Manpack, and Small Form Fit (HMS) Acquisition Strategy, which includes both Rifleman Radio and Manpack, was approved May 1, 2014.

<sup>13</sup> The Software Engineering Institute is a nationally recognized, federally funded research and development center established at Carnegie Mellon University to address software engineering practices.

<sup>14</sup> FAR Subpart 6.2.



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for soliciting potential offers. Major Nett Warrior components include the Rifleman Radio and the end user device, which is a smartphone-like device. According to documents provided by the Army, the program has already competed the procurement of end user devices. Army documents show that the Army has made a number of other purchases such as cases, secure digital memory cards, and styluses competitively. The Army is acquiring radios from a current vendor for the Nett Warrior program as government-furnished equipment but plans to purchase other hardware and software-related items competitively.

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**Army Deemed  
Competition Impractical for  
WIN-T Increments 2 and 3**

The Warfighter Information Network-Tactical (WIN-T) connects soldiers in theater with higher levels of command via line-of-sight and satellite-based communications. For WIN-T Increments 2 and 3, the Army has determined that competition for the overall system is impractical, although aspects of competition are still being used on the programs. When the WIN-T program was in system development, the Army contracted with two separate companies to develop competing designs for the system. In August 2004, the Army combined the two designs in order to develop a system with attributes from both and proceeded with a single contractor after the two contractors teamed to establish a single architecture for WIN-T that leveraged each contractor's proposed architecture to provide the Army with what it believed was a superior technical solution for WIN-T. An updated acquisition strategy for WIN-T includes language that describes plans for both market research and competition.

Pursuant to a DOD acquisition decision memorandum, the Army conducted a business case analysis to provide a recommendation with the least development and procurement cost and greatest benefit to the Army for the follow-on production of WIN-T Increment 2. Based on the analysis, the Army concluded that a sole source contract with competition at the subcontract level was most appropriate. The Army's market research led it to conclude that only one contractor, the incumbent, is capable of providing the WIN-T capability. Federal acquisition regulations permit contracting without providing for full and open competition for DOD in cases where only one responsible source or a limited number of sources, and no other supplies or services will satisfy agency requirements.<sup>15</sup> Furthermore, based on market research, government

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<sup>15</sup> FAR Subpart 6.3.

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technical experts determined that there are no new technologies being developed that can meet WIN-T Increment 3 requirements. However, the Army is awarding contracts for numerous items that support WIN-T, many of which are awarded competitively.

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## Agency Comments

We are not making recommendations in this report. We provided a draft of this report to DOD for their review and comment. DOD provided written comments, which are reproduced in Appendix III. These comments provided updated and clarifying information on a few of the systems in our review. We incorporated these and other technical comments in the report, as appropriate.

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We are sending copies of this report to the appropriate congressional committees, the Secretary of Defense, the Secretary of the Army, and other interested parties. In addition, the report will be available at no charge on GAO's website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact Belva Martin at (202) 512-4841 or [martinb@gao.gov](mailto:martinb@gao.gov). Contact points for our offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix IV.



Belva M. Martin  
Director, Acquisition and Sourcing Management

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# Appendix I: Objectives, Scope, and Methodology

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Our objective was to examine the Army's progress in implementing competitive contracting strategies for its network-related systems, in particular for its radio capabilities. To address this objective, we selected nine of the Army's 25 tactical networking systems as a non-generalizable sample for review. These systems are the Mid-Tier Networking Vehicular Radio, Soldier Radio Waveform—Appliqué, Rifleman Radio, Manpack, Airborne and Maritime/Fixed Station, Joint Battle Command—Platform, the Nett Warrior, Warfighter Information Network—Tactical Increment 2, and Warfighter Information Network—Tactical Increment 3. We chose these systems for a variety of reasons. These systems exist on either the tactical network's transport or applications level and the Army has indicated they are critical systems for ensuring soldiers are able to move mission-critical information between units. They are also a subset of the systems that constituted over \$3.6 billion in Army spending in fiscal year 2014 and several of them may also be included in capability set 14.<sup>1</sup> These nine programs also cover the breadth of operations from the warfighter at the tactical edge to the brigade command post.

We reviewed Federal Acquisition Regulations (FAR) and Department of Defense (DOD) policies to identify documentation and procedures as a guide to assess the Army's use of competitive contracting strategies. We reviewed program acquisition strategies to determine how the programs plan to use market research and competition. While we did not attempt to assess compliance with policy and federal acquisition regulations for any of these programs, we did identify examples in acquisition strategies where the Army has utilized or intends to utilize competition. We reviewed Army market research reports, requests for information, acquisition strategies, contract award information, and briefings to senior Army officials. We reviewed acquisition decision memoranda to identify key programmatic decisions that affect contracting strategies. We reviewed defense acquisition training materials designed to enhance competition in defense programs. We interviewed Army acquisition personnel and discussed both their consideration of competition in contracting strategies and their plan for engaging industry. We independently researched accessibility of acquisition announcements on federal procurement opportunity web sites. We reviewed market research strategies for identifying the contractors with the ability to provide networking solutions

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<sup>1</sup> Capability sets are numbered in sequence with the year they are fielded, so capability set 13 was fielded beginning in 2013, capability set 14 is being fielded in 2014, and so on.

and alternative courses of actions the Army considered for meeting networking requirements.

We conducted this performance audit from August 2013 to May 2014 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions, based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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# Appendix II: Supplemental Information for Nine Army Networking Systems

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## Mid-Tier Networking Vehicular Radio

The Mid-Tier Networking Vehicular Radio (MNVR) will host the Department of Defense's (DOD) Joint Tactical Radio System<sup>1</sup> (JTRS) Wideband Networking and Soldier Radio waveforms to connect unmanned sensors to decision makers on the move, which is expected to significantly reduce the decision-making time. MNVR will also provide a mobile Internet-like ad-hoc networking capability and will be interoperable with current soldier radios through simultaneous and secure voice, data, and video communications. MNVR will support Battle Command, sensor-to-shooter, sustainment and survivability applications in a full range of military operations on vehicular platforms. The program includes specific requirements to support the U.S. Army, Brigade Combat Teams, and the warfighter.

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## Background

The MNVR represents a subset of functionality that was successfully demonstrated in the JTRS Ground Mobile Radio (GMR) program. The Army reported that lessons learned from recent operational experiences have shown that a significant capability gap exists at the company level in Brigade Combat Teams in the inability of legacy tactical radios to seamlessly pass real-time information throughout the range of military operations. To address this capability gap, the Army initiated its GMR program; however, due to poor performance and rising costs, the Under Secretary of Defense for Acquisition, Technology, and Logistics directed the Army to establish a new program that manages the evaluations, testing, and delivery of non developmental item products to meet the reduced set of capabilities to be fielded to operational units in fiscal year 2014. This program is the Mid-Tier Networking Vehicular Radio that will host the JTRS networking waveforms. The MNVR program achieved a Material Development Decision in September 2013 and the program awarded a MNVR radio production contract. The initial Increment 1 Delivery Order<sup>2</sup> procures a limited number of MNVR radio systems to begin risk reduction developmental testing and requirements verification testing. The acquisition has two components, (1) the manufacture, testing, and delivery of the radio and associated hardware (B-kit) and (2)

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<sup>1</sup>The Department of Defense's Joint Tactical Radio System is a family of common, interoperable, and modular software defined radios which operate as nodes in a network to ensure secure wireless communication and networking services for mobile and fixed forces.

<sup>2</sup> A delivery order is an order for supplies placed against an established contract or with government sources.

the manufacture and testing of the adaption kit (A-kit) that mounts the B-kit to the intended platforms. Three delivery orders are planned for the B-kit:

- Delivery order 1—Provides procurement of a limited number of MNVR systems to undergo Government verification testing, and limited user test. Provides assets to support the development of vehicle installation kits by platform integrators and to meet various certification requirements.
- Delivery order 2—Successful limited user test results will inform a Milestone C decision and support an initial operational test and evaluation.
- Delivery order 3—Successful initial operational test and evaluation results will inform a full-rate production decision to procure assets to field systems to Capability Sets 17 and 18.

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## Program Status

**Acquisition category:** Non-Major Defense Acquisition Program ACAT ID, Special Interest.<sup>3</sup>

**Acquisition phase:** Production

**Procurement award:** September 2013

**Contractor:** Harris Corporation

**Contract type:** Hardware—indefinite-delivery, indefinite-quantity (IDIQ) with firm-fixed-price (FFP)

**Total program:** \$1,304.5 million

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<sup>3</sup> DOD categorizes weapon systems to determine the level of review, decision authority, and applicable procedures. An acquisition program is designated category I when the dollar value for all increments of the program are estimated to require an eventual total expenditure for research, development, and test and evaluation of more than \$480 million in fiscal year 2014 constant dollars or, for procurement, of more than \$2.79 billion in fiscal year 2014 constant dollars. An acquisition program can also be designated category I as special interest on the basis of factors such as technological complexity or large commitment of resources. While the MNVR is not projected to meet these category 1 spending levels, the Under Secretary of Defense for Acquisition, Technology, and Logistics designated MNVR as an acquisition category ID special interest program. The Milestone Decision Authority is the Defense Acquisition Executive, or a delegate. The “D” refers to the Defense Acquisition Board, which advises the Defense Acquisition Executive at major decision points.

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**Research and development:** \$109.1 million

**Procurement:** \$1,195.4 million

**Quantity:** Estimated procurement of 10,293 radios

**Next major program event:** MNVR will participate in NIE 14.2 in May 2014 as a risk reduction exercise. A limited user test is scheduled for the first quarter of fiscal year 2015.

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## Competition History and Plans

In February 2012, the Army revalidated the need for a mid-tier wideband networking radio for brigade combat teams to fill the gap created by the cancellation of the Ground Mobile Radio. The Army conducted a cost/benefit analysis for three options and concluded that a new MNVR procurement was the best solution. The Army posted a pre-solicitation notice and later posted the request for proposals. On August 27, 2012, the Under Secretary of the Army determined that full and open competition would be used to make a single award for a firm fixed price, IDIQ contract for a MNVR.<sup>4</sup> According to the Army, such a contract instrument would not obligate the Army to procure large quantities of units. Rather, it would allow the Army to purchase only what is needed in the near-term through delivery orders. It also provides the Army the opportunity to infuse technology as it becomes available into future delivery orders. On September 24, 2013, following full and open competition, the Army awarded a MNVR production contract to Harris Corporation valued at up to \$140 million. The Army included a clause in the contract that makes Harris responsible for all government and contractor costs related to follow-on verification testing, to include the costs of any associated retesting required by failures. The contract has a 3 to 5 year ordering period. The Army expects that after 3 to 5 years, advancements in operating system software, power amplifiers, digital processing, as well as advancements in waveform capabilities will evolve to the point that defense stakeholders will consider revising the governing requirements document and will coordinate to determine the need for an updated requirement and a new procurement. If stakeholders determine the need for a new procurement, MNVR will pursue industry competition with a full and open solicitation.

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<sup>4</sup> IDIQ contract defined at FN 10, p. 9

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## SRW Appliqué

The Soldier Radio Waveform (SRW) Appliqué Radio System is a single channel, vehicular mounted, software-defined radio for use by brigade combat teams. It is essentially a data transmission module that can be mounted into certain vehicle configurations of current Single Channel Ground and Airborne Radio System radios that have no capability to send or receive data. SRW-Appliqué runs the JTRS soldier radio waveform and acts as a conduit for transmitting voice and data between the dismounted soldier, the soldier's unit, and higher headquarters. SRW-Appliqué is intended to interact seamlessly with the Rifleman Radio, which is carried by platoon, squad-level, and team-level soldiers, and which also runs the SRW. The Army plans to integrate the SRW-Appliqué radios with multiple vehicle platforms for fielding flexibility.

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## Background

In May 2011, the Army issued a directed requirement for a soldier radio waveform capability. Two vendors offered systems that the Army ultimately evaluated at a Network Integration Evaluation in October and November 2011. The operational need for SRW-Appliqué was confirmed by the systems' participation at this event.

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## Program Status

**Acquisition category:** NA-Commodity Buy

**Acquisition phase:** Procurement

**Procurement contract award:** April 2014

**Contractor:** Contracting team of Exelis, General Dynamics, Harris Corporation, and Thales

**Total program:** Estimated \$800 million to \$900 million

**Quantity:** Estimated procurement of 5,000 radios

**Next major program event:** Source selection and contract award.

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## Competition History and Plans

Using full and open competition, the Army plans to award multiple multi-year indefinite delivery, indefinite quantity contracts with a firm-fixed-price for SRW-Appliqué radios. In March 2012, the Army finalized market research results and concluded that only five of the 10 interested vendors were capable of providing the requisite SRW radio system. In June 2012, the Army posted a presolicitation notifying industry of plans to publish a



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request for proposal, which it did in October 2012. The Army is considering the use of on ramps and off ramps in the contract so new vendors can be added or underperforming vendors can be removed.<sup>5</sup> The government-owned SRW will be made available to contractors for integration onto their existing hardware solutions.

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## Airborne and Maritime/Fixed Station

AMF products are software programmable, multi-band, multi-mode mobile networking radios, providing simultaneous voice, data and video communications for Army aviation platforms. The radios will operate in networks supporting the Common Operational Picture, situational awareness, and interoperability of Mission Command Systems. The AMF program will procure two non-developmental radios to meet user needs. One radio, Small Airborne Link 16 Terminal (SALT), will possess Link 16 and SRW capability. The second, Small Airborne Networking Radio (SANR), will provide networking and legacy waveform capability. SALT will provide one channel dedicated to a Link 16 capability and a second software-defined radio channel that can host SRW. SANR will provide a two-channel software-defined radio that provides interoperability with the Army's Mid-tier Networking Waveform capability that will be widely deployed to ground forces. The radio will be installed on AH-64E Apache, UH-60M/L Black Hawk, CH-47F Chinook, and OH-58F Kiowa Warrior helicopters in addition to the MQ-1C Gray Eagle unmanned aircraft system.

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## Background

The AMF program was restructured in accordance with Milestone Decision Authority direction dated May 2012 and July 2012. The May 2012 decision memorandum directed the closeout of the AMF system development and demonstration contract awarded in March 2008. The July 2012 decision memorandum approved a non-developmental item

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<sup>5</sup>According to the SRW Appliqué performance work statement, the contracting officer may, if it is in the best interest of the government, conduct an "on ramp" to add additional contract holders to the SRW Appliqué contract, subject to certain criteria. For instance, notice of an on ramp, containing a solicitation, is to be publicized on an Army website for industry. Also, the award of any new contract cannot increase the overall ceiling of the basic contract. Conversely, if a contractor does not participate in the ordering process as expected and successfully perform the terms of their orders, the contracting officer may "off ramp" the contractor by executing a no-cost settlement, terminate for convenience, or implement a termination for default, if applicable.

acquisition approach leveraging previous industry investment in tactical radio technology.

AMF will operate networking waveforms and select waveforms that are widely deployed by Joint Forces today, enable interoperability between different types of platforms, and transport information through the tactical network to joint network member nodes. The Army has determined that the need for interoperable systems, including common waveforms, software applications, and network operations is critical to the mobile tactical network capability.

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## Program Status

**Acquisition category:** ACAT ID

**Acquisition phase:** Pre-solicitation for production

**System development contract award:** March 2008

**Contractor:** Lockheed Martin<sup>6</sup>

**Contract type:** Cost-plus-award-fee

**Total program:** \$3,582.7 million

**Research and development:** \$1,849.3 million

**Procurement:** \$1,733.4 million

**Quantity:** 7,720 radios, which is 15,440 channels

**Next major program event:** SALT production and SANR low-rate initial production decisions in first quarter 2016.

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## Competition History and Plans

The Army developed two AMF variants—the SALT and the SANR. The SALT is intended as a 2-channel radio capable of running the Link 16 and SRW waveforms. The Army intends to install the 2-channel Link 16 and SRW capable AMF SALT radios on all AH-64E aircraft starting with Lot 6.

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<sup>6</sup> The Lockheed Martin system development contract period of performance expired as of August 31, 2013 and is in the process of being closed out by the Defense Contract Management Agency.

The SANR is also a 2-channel radio capable of utilizing the Single Channel Ground and Airborne Radio System, Soldier Radio, and Wideband Networking Waveforms. The radio will be installed on AH-64E Apache Block III, UH-60M/L Black Hawk, CH-47F Chinook, and OH-58F Kiowa Warrior helicopters, in addition to the MQ-1C Gray Eagle unmanned aerial system.

In March 2008, the Program Office awarded Lockheed Martin Corporation a cost-plus-award-fee contract through full and open competition. The basic contract was to acquire the complete JTRS Software Defined Radio system and subsystems in accordance with the 2006 JTRS Operational Requirements Document with the option to add capability packages for additional platform requirements. In September 2011, the Milestone Decision Authority (MDA) directed a program and contract restructure in order to meet the requirements. AMF then conducted market research on potential non-developmental item solutions for Army Aviation. Market research showed less complex non developmental solutions would be available to meet revised user requirements and identified an additional vendor who was interested in competing.

AMF conducted market research for the SALT radio, advising industry of the pending acquisition and soliciting inquiries from interested parties. AMF received and analyzed market survey data and initially determined a competitive approach in support of the planned SALT procurement for the PM Apache AH-64E Lot 6, was not feasible. On June 24, 2013, via Federal Business Opportunities, the government announced its intention to solicit on a sole source basis. In response to the synopsis, another vendor indicated its interest in the acquisition. Based on information presented by the second vendor, the Government concluded the SALT contract strategy should be full and open competition. The Army posted a revised solicitation notifying industry that the award would be competed and posted the draft request for proposals on January 17, 2014. On February 3, 2014, under an update to the same solicitation, the Army notified interested vendors that it would be hosting a pre-solicitation conference at Aberdeen Proving Ground, Maryland, in order to address any non-competition sensitive questions about the draft request for proposals. The Army anticipated issuing the formal request for proposals by March 3, 2014, and contracts by September 2014, but this has been delayed due to the lack of an approved acquisition strategy. The Army plans to award, via full and open competition, a single firm-fixed-price/cost-plus-fixed-fee hybrid type contract with a one-year base period and three one-year option periods for delivery of low-rate production and full-rate production quantities of SALT systems, spares and associated

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services. The program office estimates that the SALT full-rate production contract will be awarded in fiscal year 2017.

According to a September 17, 2013, presolicitation announcement, the Army anticipates awarding two firm-fixed-price/cost-plus-fixed-fee hybrid type contracts with a one-year base period and four one-year option periods for SANR. The Army anticipated issuing a request for proposals by December 2, 2013, but the SANR solicitation schedule is being reassessed as a result of the budget estimate submissions. The Army would later down select to a single contractor to deliver both low-rate initial production units and full-rate production units.

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## Rifleman Radio

The Army's Handheld, Manpack, and Small Form Fit (HMS) program evolved from the JTRS program and provides software-programmable digital radios to support the Army's tactical communications requirements. The Rifleman Radio is a handheld, networking radio. In addition to functioning as a stand-alone, handheld radio, the Army intends the AN/PRC-154A variant to be the radio used as part of the Nett Warrior program. Both the Secret and unclassified variants of the Rifleman Radio are single-channel radios with a commercial global positioning system receiver that operate at various transmission frequencies using the SRW, which enables the radios to form an ad-hoc data and voice communications network with other SRW-capable radios. Army leaders and Soldiers use Rifleman Radios to communicate and create networks to exchange voice, video, and data using the SRW during all aspects of military operations

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## Background

The JTRS HMS program meets the radio requirements for Soldiers and small platforms (such as missiles and ground sensors). JTRS HMS Increment 1 is structured as a single program of record with two phases. Phase 1 developed Small Form Fit and a Rifleman Radio for use in a sensitive but unclassified environment. Phase 2 is for the 2-Channel Manpack and small form fit-B for use in a classified environment. JTRS HMS will provide new networking capability to the individual Soldiers, Marines, Sailors and Airmen and also continue to provide legacy radio interoperability. JTRS HMS provides the warfighter with a software reprogrammable, networkable multi-mode system capable of simultaneous voice, data and video communications. The program encompasses specific requirements to support the US Army, US Navy, US Marine Corps, US Air Force and the Special Operations Command communication needs.

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## Program Status

**Acquisition category:** ACAT ID, as part of HMS program

**Acquisition phase:** Production

**System development contract award:** July 2004

**Contractor:** General Dynamics C4 Systems Inc.

**Contract type:** Cost-Plus-Award-Fee

**Low-rate production contract:** June 2011

**Contract type:** Firm-Fixed-Price

**Total program (fiscal years 2013-2019):** \$361.26 million

**Quantity (fiscal years 2013-2019):** 37,849

**Next major program event:** Draft request for proposal third quarter FY 2014

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## Competition History and Plans

The Army continues to receive low rate units from the June 2011 contract; however, Army officials say that because of the Congressional direction for full and open competition, the full rate production decision has been delayed to allow for changes in the program acquisition strategy. The program is coordinating with DOD officials on a competition strategy prior to solicitation for procurement.

The Army plans to award multiple fixed-price contracts to all qualified vendors using a two-step sealed bid process. Further, the Army plans to award initial delivery orders for qualification testing and operational assessment and award full rate production orders based on operational assessments and best value. The full-rate production review for the Rifleman Radio, which was initially expected to take place in May 2012, is now expected to begin in January 2015.

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## Manpack

The HMS program evolved from the JTRS program and provides software-programmable digital radios to support tactical communications requirements. The Manpack radio is a two-channel radio with military global positioning system that is capable of operating at various transmission frequencies using the SRW, the legacy Single Channel Ground and Airborne Radio System waveform, and current military

satellite communications waveforms allowing Soldiers to participate in voice and data communications networks and transmit position location information.

Army commanders use Manpack radios to provide networked communications for host vehicles and dismounted Soldiers during all aspects of military operations; communicate and create networks to exchange voice, video, and data using legacy waveforms or the SRW; and share voice and data between two different communications networks.

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## Background

As we discussed earlier, the histories of the Manpack and Rifleman radios were parallel until 2011.<sup>7</sup> Low-rate production began in June 2011, for 100 Manpack radios. The full-rate production decision, initially expected in December 2012, is now expected to be in February 2015. However, in October 2012, the Army received approval for an additional 3,726 low-rate production Manpack radios. The initial production delays caused a delay in initial operational capability from March 2013 to August 2013.

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## Program Status

**Acquisition category:** ACAT ID, as part of HMS program

**Acquisition phase:** Production

**System development contract award:** July 2004

**Contractor:** General Dynamics C4 Systems Inc.

**Contract type:** Cost-Plus-Award-Fee

**Low rate production contract:** June 2011

**Contract type:** Firm Fixed Price

**Total program (fiscal year 2013-2019):** \$1,900.35 million

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<sup>7</sup> The JTRS HMS programs started with a single developmental contract for both the Rifleman and Manpack radios, but were then separated into two acquisition schedules as the full rate productions decisions were aligned with the revised acquisition strategy.

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**Quantity (fiscal years 2013-2019):** 12,553

**Next major program event:** Draft Request for Proposal fourth quarter fiscal year 2014.

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## Competition History and Plans

Following full and open competition, a single cost-plus-award-fee development contract was awarded in July 2004. The Army began low rate production in 2011, using a firm-fixed-price contract, and continues to receive low-rate units. However, the Army told us that, because of the Congressional direction for full and open competition, the full rate production decision has been delayed to allow for changes in the program acquisition strategy. The program is coordinating with DOD officials on a competition strategy prior to solicitation for procurement. The Army plans to award multiple fixed-price contracts to all qualified vendors using a two-step sealed bid process. Further, the Army plans to award initial delivery orders for qualification testing and operational assessment and award full-rate production orders based on operational assessments and best value.

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## Joint Battle Command-Platform

The Joint Battle Command-Platform (JBC-P) provides joint forces command and control (C2) and situational awareness capability at the platform level and enables mission accomplishment across the entire spectrum of joint military operations. JBC-P serves as the cornerstone for Joint Blue Force Situational Awareness and provides continuous near real-time identification of friendly locations to populate the Joint Common Operating Picture. JBC-P software is designed to run on existing Force XXI, Battle Command, Brigade and Below (FCBC2) systems as well as new hardware items, thereby reducing the Army's investment in new hardware. JBC-P is an upgrade from FCBC2 in that it provides enhanced chat room capability, improved mission command applications, a more intuitive graphical interface, enhanced blue force situational awareness, and ruggedization of hardware.

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## Background

Force XXI, Battle Command, Brigade and Below began as a program in 1996 with primary capabilities of Situational Awareness (e.g. friendly and enemy position data) and Command and Control messaging (orders, free text, overlays, etc.) for combat platforms and tactical vehicles. In its early years, FBCB2 relied upon line-of-sight radio communications, but later adopted satellite and became commonly referred to as Blue Force Tracking, or BFT. In 2006, the Army began a software product line called Joint Capabilities Release (JCR) that, according to Army officials,

provided increased chat and messaging capabilities. However, these capabilities were still limited. To address these limitations, the Army initiated a follow-on effort called JBC-P, which the Joint Requirements Oversight Council approved in May 2008. JBC-P heavily leverages both the hardware and product line software of JCR and FBCB2 to introduce its enhancements to operational units. In September 2009, an Acquisition Decision Memorandum approved the system's entry into the Engineering and Manufacturing Development Phase. In July 2012, the Program Executive Office, Command and Tactical, as the JBC-P Milestone Decision Authority, approved the program for production. During the October through November 2013 Network Integration Evaluation 14.1, the Army conducted a JBC-P software build 5.1 customer test to demonstrate correction of Initial Operational Test and Evaluation deficiencies which supported a Full Rate Production decision in December 2013.

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Program Status

**Acquisition category:** ACAT II<sup>8</sup>

**Acquisition phase:** Production

**Contract award:** Various

**Contractor:** Various

**Contract type:** Various

**Total program:** \$1,975.11 million

**Research and development:** \$206.4 million

**Procurement:** \$1,768.7 million

**Quantity:** 25,086<sup>9</sup>

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<sup>8</sup> ACAT II programs are defined as those acquisition programs that do not meet the criteria for an ACAT I program, but do meet the criteria for a major system estimated by the DoD component head to require an eventual total expenditure for RDT&E of more than \$185 million in FY 2014 constant dollars, or for procurement of more than \$835 million in FY 2014 constant dollars or those designated by the Milestone Decision Authority (MDA) to be ACAT II. The MDA is the DoD Component Acquisition Executive (CAE) or a designee.



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**Next major program event:** JBC-P will participate in NIE 14.2 for Follow-on Test and Evaluation as well as NIE 15.1 as a System Under Evaluation (SUE).

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## Competition History and Plans

According to the Army, the FBCB2 and BFT hardware systems are known as the mounted Family of Computer Systems; DRS Tactical has a 3-year contract with 2 option years to provide needed hardware. The JBC-P software is being developed in-house at the U.S. Army Aviation and Missile Research, Development and Engineering Center's Software Engineering Directorate, rather than selecting a contractor. The program's strategy is to use existing hardware so that JBC-P will largely be a software-intensive effort. The Army also stated they plan to recompute periodically for things like computers to get new technologies and reduce costs and contends that competition has already netted 25-30% satellite savings and other cost savings for the network operations center. The program has conducted market research to identify potential sources and is engaging industry, both large and small.

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## Nett Warrior

The Nett Warrior is an integrated dismounted leader situational awareness system for use during combat operations. According to the Army, the system provides unparalleled situational awareness to the dismounted leader and allows for faster and more accurate decisions in the tactical fight. The Nett Warrior program focuses on the development of the situational awareness system, which has the ability to graphically display the location of an individual leader's location on a digital geo-referenced map image on a smart device. Additional Soldier and leader locations also can appear on the smart device digital display. Nett Warrior connects through a secure radio to send and receive information from one Nett Warrior to another, thus connecting the dismounted leader to the network. These radios will also connect the equipped leader to higher echelon data and information products to assist in decision making and situational understanding. Soldier position location information will appear on network via interoperability with the Army's JTRS capability. This allows the leader to easily see, understand and interact in the method that best suits the user and the particular mission, help leaders avoid fratricide, and make soldiers more effective and lethal in the execution of their combat missions.

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<sup>9</sup> Quantity amount of 25,086 is only for new JBC-P system hardware procurement and does not include FBCB2 legacy systems on which JBC-P will be installed.

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## Background

The Under Secretary of Defense for Acquisition, Technology, and Logistics approved the Ground Soldier Ensemble (later renamed Nett Warrior) for entry into the Technology Development Phase in February 2009. The initial low-rate production contract was awarded in 2012 with a follow-on low-rate buy authorized in July 2013. The Nett Warrior is intended to address operational requirements to provide the dismounted Leader with improved situational awareness, command and control capabilities. It links the dismounted Leader via voice and data communications to Soldiers at the tactical edge and to headquarters at Platoon and Company levels.

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## Program Status

**Acquisition category:** ACAT II

**Acquisition phase:** Production

**Technology development:** February 2009

**Low rate production contract award:** April 2012

**Contractor:** Various

**Contract type:** Various

**Total program:** \$ 793.5 million

**Research and development:** \$338.1 million

**Procurement:** \$455.4million

**Quantity:** 26,680

**Next major program event:** Full-rate production – Second Quarter 2015

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## Competition History and Plans

Three Technology Development contracts were awarded in April 2009 to General Dynamics C4 Systems of Scottsdale, Arizona; Raytheon Network Centric Systems of McKinney, Texas; and Rockwell Collins of Cedar Rapids, Iowa. The systems developed under these contracts have undergone Developmental Tests and completed a limited user test in late 2010.

In August 2011, the Army held a configuration steering board that approved the recommended de-scoping of the system's requirements and

set the new technical baseline. Based on the configuration steering board recommendations, the Army further refined the system to provide competitively procured End User Devices (commercial-based smartphone-like devices) connected to the Rifleman Radio. As a result of the steering board changes, the Army did not pursue the original planned limited competition among the technology development phase contractors for production effort and instead adopted a commercial approach, allowing the program to proceed directly to low rate production. Additionally, according to Army Officials, the program plans to employ competition at the component level through contract actions with short durations, even one-time buys, to take advantage of technology advancements. For example, the end user devices will likely be purchased using competitively awarded indefinite delivery, indefinite quantity contract delivery orders. This type of contract allows the agency to bring in new contractors without having to go through the process of awarding a new competitive contract.

According to documents provided by the Army, the Nett Warrior program executed 24 competitive contract actions over fiscal years 2012 and 2013 valued at \$94.9 million. According to officials, the Army made the majority of these purchases through other agencies' contract vehicles as purchase orders. The purchases included a variety of items, such as smart phones, cases, secure digital memory cards, and styluses. The Nett Warrior has also used market research to get feedback from industry utilizing the Federal Business Opportunities site to post notices intended to obtain industry comments on proposed solicitations for subcomponents. In January 2013, the Army posted a notice seeking industry feedback on a draft request for proposals that would seek to procure networking hubs and power supply.

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## Warfighter Information Network- Tactical Increment 2

Warfighter Information Network - Tactical (WIN-T) is essentially the soldiers' Internet, providing a satellite-based tactical communications backbone, to which other Army networked systems need to connect in order to function. WIN-T employs a combination of terrestrial, airborne, and satellite-based transport options, to provide robust, redundant connectivity. It enables battle command on the move, keeping highly mobile and dispersed forces connected to one another and to the Army's global information network. With essential voice, video and data services, commanders can make decisions faster than ever before and from anywhere on the battlefield information. WIN-T will be fielded in three increments, all of which are managed by the same program office. Increment 1 is fielded, Increment 2 is currently fielded, and Increment 3 is

currently being restructured. We discuss Increment 3 later in this appendix.

WIN-T Increment 2 provides commercial and military band satellite communications to Division, Brigade, Battalion and Company while also providing on the move capability and a mobile infrastructure. It further provides satellite communications and supports limited collaboration and mission planning. Using equipment mounted on combat platforms, WIN-T Increment 2 delivers a mobile capability that reduces reliance on fixed infrastructure and allows leaders to move on the battlefield while retaining situational awareness and mission command capabilities. It enables distribution of information via voice, data and real-time video from ground-to ground and ground-to-satellite communications.

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## Background

The Army designed the WIN-T as three-tiered communications architecture (space, terrestrial and airborne) to serve as the Army's high-speed and high-capacity tactical communications network. WIN-T was restructured following a March 2007 Nunn-McCurdy unit cost breach of the critical threshold,<sup>10</sup> and will be fielded in the following three increments:

- Increment 1: Networking At-The-Halt enables the exchange of voice, video, data and imagery throughout the battlefield using a satellite based network. Increment 1 has been fielded.
- Increment 2: Initial Networking On-The-Move provides command and control down to the company level and implements improved network security architecture. Increment 2 has been fielded.
- Increment 3: Develops the network operations software to enable seamless integration of tactical network functions and enhanced waveforms for increased throughput capability. WIN-T Increment 3 is currently being restructured.

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<sup>10</sup> 10 U.S.C. § 2433 establishes the requirement for the DOD to prepare unit cost reports on major defense acquisition programs or designated subprograms. If a program exceeds cost growth thresholds specified in the law, this is commonly referred to as a Nunn-McCurdy breach, which DOD is required to report to Congress and, if applicable, submit a certification to Congress in order to continue the program, in accordance with 10 U.S.C. § 2433a.

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Program Status

**Acquisition category:** ACAT ID

**Acquisition phase:** Procurement

**Program start:** June 2007

**Low rate production contract award:** March 2010

**Contractor:** General Dynamics C4 Systems, Inc.

**Contract type:** FFP IDIQ

**Total cost:** \$5,046.2 million

**Research and development:** \$296.6 million

**Procurement:** \$4,749.6 million

**Quantities:** 2,156

**Next program action:** Full-rate production decision

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Competition History and  
Plans

The initial milestone B, which is the point at which a system enters system development, in 2003 included two competing contractors—Lockheed Martin and General Dynamics C4 Systems. In August 2004 the competing contractors merged into one team with General Dynamics as the lead. After the Nunn McCurdy breach in 2007 and program restructure, a sole source contracting approach was used based on the authority of 10 U.S.C. 2304(c)(1) that the requirements were available from only one or a limited number of responsible sources and no other supplies or services would satisfy agency requirements and for follow-on production since supplies are only available from the original source for continued production. A second Follow-on Operational Test and Evaluation is scheduled for the October through November 2014 timeframe at NIE 15.1 to support the full rate production decision review, which is expected to occur in 2015. The Government will consider requiring the contractor in the proposal to identify items which the government will be able to acquire competitively in the future, in substantial quantities.

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## Warfighter Information Network- Tactical Increment 3

WIN-T Increment 3 builds on the capabilities of previous WIN-T Increments by developing the network operations software (NetOps) <sup>11</sup> that enables the seamless integration and management of tactical networks, and the enhanced waveforms that increase throughput and improve network capacity and robustness. Until recently, WIN-T Increment 3 had intended to introduce an additional line-of-sight link using an airborne platform. However, an Army Configuration Steering Board meeting held on November 7, 2013 approved the de-scoping of the program to focus on NetOps and completion of the waveform development efforts. As a result, WIN-T Increment 3 is currently being restructured and upon Defense Acquisition Executive approval, a revised program baseline will be created.

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### Background:

Increment 3: Full Networking On-The-Move provides full mobility command and control for all Army field commanders. Network reliability and robustness is enhanced with the addition of enhanced network operations software and enhanced waveforms.

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### Program Status

**Acquisition category:** ACAT ID

**Acquisition phase:** Development

**Program start:** June 2007

**Development contract award:** July 2007

**Contractor:** General Dynamics C4 Systems, Inc.

**Contract type:** Cost Plus Award Fee

**Total cost:** \$ 3,621.8 million

**Research and development:** \$ 1,991.0 million

**Procurement:** \$ 1,630.8 million

**Quantities:** 699

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<sup>11</sup> The Networks Operations Software provides the monitoring, control, and planning tools to ensure management of the voice, data, and internet transport networks.

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**Next program action:** TBD

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**Competition history and  
plans**

The initial development contract was the result of a competitively awarded contract between two competing contractors—Lockheed Martin and General Dynamics C4 Systems. In August 2004 the competing contractors merged into one team with General Dynamics as the lead. The follow-on development contract will be a sole source to the current contractor—General Dynamics C4 Systems. According to Army officials, sole source is planned because the contract cannot be competitively awarded without unacceptable delays in fulfilling the Army's requirements. For the follow-on development contract, the contractor plans to conduct sub-tier competition to ensure it is getting the best commercial products at fair and reasonable prices. The program anticipates a sole source award for low rate production to ensure success of the manufacturing demonstrations and initial operational tests.

# Appendix III: Comments from the Department of Defense

GAO received DOD's letter on May 21, 2014.



ACQUISITION

THE ASSISTANT SECRETARY OF DEFENSE  
3015 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3015

Ms. Belva M. Martin  
Director, Acquisition and Sourcing Management  
U.S. Government Accountability Office  
441 G Street, N.W.  
Washington, DC 20548

Dear Ms. Martin:

This is the Department of Defense (DoD) response to the GAO Draft Report, GAO-14-460, "ARMY NETWORKS: Select Programs Are Utilizing Competition to Varying Degrees," dated April 24, 2014 (GAO Code 121115). The Department acknowledges receipt of the draft report.

The Department requests the following changes be considered in the final version of the report:

- The draft report does not reflect that fiscal budget constraints forced the Army to address its funding priorities and requirements regarding the Warfighter Information Network-Tactical (WIN-T) program. In November 2013, the Army Configuration Board de-scoped the WIN-T Increment 3 program by removing hardware requirements and the President's FY 2015 budget submission reflected this decision. The Army intends to complete software development in FY 2015 and testing in FY 2016 that is required to transition Network Operations Build 4/5 and Net Centric Waveform 10.x capability to Increment 1 and Increment 2. The Army will complete development of the Highband Networking Waveform 3.0 and demonstrate its capability prior to entering it into the DoD Waveform Information Repository.
- Table 2 should be updated to reflect that the Handheld, Manpack, Small Form Fit (HMS) Acquisition Strategy (includes Rifleman and Manpack radios) was approved by the Defense Acquisition Executive on May 1, 2014.
- Update the draft report to reflect current information regarding the WIN-T Increment 3 and HMS Rifleman and Manpack Radio programs.

The Department appreciates the opportunity to comment on the draft report. If you have any questions, my point of contact is Mr. Rich Pino, Office of the Deputy Assistant Secretary of Defense for C3, Cyber, and Business Systems, at [richard.d.pino.civ@mail.mil](mailto:richard.d.pino.civ@mail.mil).

Sincerely,

A handwritten signature in cursive script, appearing to read "Katrina McFarland", is written above the printed name.

Katrina McFarland



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# Appendix IV: GAO Contact and Staff Acknowledgments

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## GAO Contact

Belva M. Martin, (202) 512-4841 or [martinb@gao.gov](mailto:martinb@gao.gov).

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## Staff Acknowledgments

In addition to the contact named above, LaTonya Miller, Assistant Director; Marie P. Ahearn; William C. Allbritton; Marcus C. Ferguson; William Graveline; James Haynes; Sean C. Seales; Wendy P. Smythe; Robert S. Swierczek; and Paul G. Williams made key contributions to this report.

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